



# Using the nominal group technique with clickers to research student experiences of e-learning: a project report

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## Contributions and acknowledgments

Nick Bunyan and Tünde Varga-Atkins contributed to the early research on using Nominal Group Technique, and initiated the project idea regarding the exploration of using technology in this process. Ray Fewtrell carried out training and consultancy on the Nominal Group Technique. Ray, Nick and Tünde worked together successfully on securing the ELESIG grant. Tünde coordinated the project and conducted the session together with Jaye, who contributed to the adapted focus group sessions. Tünde authored the report, with Nick and Jaye's feedback. Robin Sellers and Debbie Prescott helped with proofreading. The project team would also like to thank Ben Watson, WordWallWeb, for his continued support with the clickers and offering training as and when team needed it. Finally, a great thanks to ELESIG for making the project possible.

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## Introduction: how the project came about

Two members of the project team, Tünde Varga-Atkins and Nick Bunyan (eLearning Unit, University of Liverpool) became first acquainted with the Nominal Group Technique a few years ago during a research seminar presented by Ray Fewtrell (Medical Education, University of Liverpool) where the potential for this technique to be used as a curriculum evaluation tool became clear. After training from Ray, Tünde and Nick successfully piloted the technique during a curriculum review session with undergraduate law students in 2009/10. Jaye McIsaac (Educational Development, University of Liverpool) was then recruited to the team for her expertise in curriculum review in 2011.

Given that two team members' job role is supporting staff to enhance their teaching and learning using technology, the team then became interested in whether technology could be used to support the various stages of the Nominal Group session to make the process more efficient. With the help of the ELESIG small-grants scheme the project 'Using the nominal group technique with clickers to research student experiences of e-learning', was initiated.

The project team were not aware of any other studies that had used technology in the conduct of face-to-face Nominal Group sessions before, though sessions had been run at a distance using web-conferencing software (Kristofco *et al* 2005). As this project report demonstrates, the team did not just look at the opportunities technology can bring to enhancing the technique, but also learned a lot more about the Nominal Group Technique as an evaluation technique in itself. These findings are presented in the following project report sections:

- The aims of the research.
- The project outputs.
- The Nominal Group Technique and its stages.
- A literature review of the Nominal Group Technique.
- Methodology.
- Findings, and finally,
- Conclusion.

## Aims

The aims of the research project were to:

1. Share the project team's learning with fellow researchers on the experiences of running student feedback groups using the Nominal Group Technique.
2. Trial text-entry clickers in order to see whether their use can make the process of conducting student feedback sessions more efficient and engaging.

As the report will demonstrate, the achieved aims extend the above two original aims to also include our more in-depth learning about the technique itself, especially when it concerns the suitability of Nominal Group Technique in different educational contexts.

## Project Outputs

The project outputs include:

- A practical guide entitled 'The Nominal Group Technique – a practical guide for facilitators' (available at <http://slidesha.re/s5KPUr>)
- This project report.
- An ELESIG-hosted webinar (forthcoming in 2011/12).

## The Nominal Group Technique and its stages

The Nominal Group Technique is a structured face-to-face group session with the purpose of achieving group consensus and action planning on a chosen topic (see also Varga-Atkins 2011). It was originally developed by Delbecq *et al* (1975). The term 'nominal' group signals that the group is only 'in name' a group, in reality, it requires *individual* input from its members.

The stages and the process of the technique is described in detail in the Practical Guide that accompanies this project report (Varga-Atkins 2011), so for brevity, only the stages are listed below:

- Introduction – the facilitator introduces the purpose of the session, the rules and its structure, and poses the question to participants.
- Stage 1 – **individual responses** are collected to the question in a silent generation phase.
- Stage 2 – **clarification and consolidation**: responses are read out one by one and clarified by participants; then similar/same items are consolidated e.g. merged under the same item.
- Stage 3 – **ranking responses**: individually, participants rank their top five responses in order of importance.
- Ranking results are calculated and shared with the group.
- Closure and thanks.

## The Nominal Group Technique: a literature review

In this section, the ways in which the Nominal Group Technique has proved useful are examined. The work sourced is focussed on Higher Educational contexts that happened to be found in the US and the UK, enumerating the benefits and challenges encountered by researchers and educators who have employed the technique.

### Uses of the Nominal Group Technique in educational contexts

The literature review demonstrates that the Nominal Group Technique has been used in a number of disciplines number of disciplines ranging from health to humanities and social sciences, and as the cited studies in

studies in

Table I show, its use is particularly widespread in education and health sciences. The majority of the cases examined used the Nominal Group Technique related to some kind of curriculum development in Higher and Further Education, whether it was for the purposes of curriculum review, evaluation or design.

Authors	Discipline	Purpose	Participants	N=	NGT question
O'Neil and Jackson 1983	BEd	Curr. planning	Academic staff	11	"What are the important ingredients in the revised BEd?"
Lomax and McLeman 1984	BEd	Curriculum evaluation	Students, 12 groups of 7-14 students	122	[not included, the question was on the evaluation of the BEd programme]
Chapple and Murphy 1996	Nursing (UG)	Curriculum evaluation	3 groups of students, with subgroup size bw 10-23	[unclear: but at least 43]	"How the course might be strengthened?"
Davis, Rhodes and Baker 1998	Nursing (UG)	Curr. review	Academic staff	40	"What are the strength of the undergraduate curriculum?"; "Within the UG curriculum, what are the areas that need improvement?"
Lloyd-Jones et al 1999	Medical education	Curr. Evaluation and questionnaire development	Students	10	'In what way can the course be strengthened?' 'What are the strengths of the course'
Dobbie et al 2004	Medical education	Curriculum evaluation	Students	30	"What were the strengths of the course?" "What were the suggestions for improvement?"
Kristofco et	Medical education -	Organizational	2 sessions, with	20	"What are the key attributes that define the ideal CME [continuing

Authors	Discipline	Purpose	Participants	N=	NGT question
al 2005	CPD	planning	panel experts		medical education] institution?"
Williams et al 2006	Radiographers	Curr. design	8 regional groups incl. managers, educators, practitioners and learners	92	"With regards to clinical education and training in diagnostic imaging & therapeutic radiography, what factors do you think affect quality and capacity?"
Crenshaw et al 2011	Cultural competence (medical education)	Curr. design	4 * 4 different groups incl medical students, residents, community & academic physicians	45	"What should be included in the curriculum that focuses on cultural competence training for physicians?"

**Table 1 Uses of the Nominal Group Technique in educational contexts: a summary**

Participants across the studies quoted above included academic staff members, students and also stakeholders (such as panel experts, clinicians). The typical number of participants per group was between 8-12, and the total number of participants per study ranged from 11 up to 122.

### Benefits of the Nominal Group Technique

The above studies cite a range of benefits that using the Nominal Group Technique can bring. These are grouped under five subheadings: benefits for individual participants, benefits for the group dynamics and participants, benefits for the purpose/task, benefits for the facilitator, and benefits for the commissioner of the research to whom findings are reported.

#### Benefits for individual participants

In the Nominal Group session, the Stage of individual-responses precedes group discussion, which has been cited to help maintain the autonomy of individual viewpoints (Lomax and McLeman 1984) and members making their own judgements (Williams *et al* 2006). It allows equal input by each participant (Kristofco *et al* 2005) and encourages participants to consider all options (Crenshaw *et al* 2011). Also inherent in its structure is that it generates its own issues rather than those prescribed by the researcher, for instance as it is the case with surveys (Lomax and McLeman 1984, Chapple and Murphy 1996, Dobbie *et al* 2004, Lloyd-Jones *et al* 1999).

#### Benefits for group dynamics

As far as group dynamics are concerned, the structure of the Nominal Group Technique helps to value every member's input, even that of shy or reticent members (Chapple & Murphy 1996); it

helps reduce vocal voices or bias in the group (Dobbie *et al* 2004), and so, promotes equal participation (Williams *et al* 2006; Crenshaw *et al* 2011). During a nominal group session, the generated ideas and responses to the question(s) are displayed to the whole group. This visual representation of mental processes was found to enhance the satisfaction felt by group members in the process (Delbecq *et al* 1975; O'Neil and Jackson 1983; Crenshaw *et al* 2011). In the last stage, ranking the list is the product of group consensus and provides a direct reflection of the implicit views held by a group, i.e. the achieved consensus (Kristofco *et al* 2005).

### **Benefits for the purpose/task**

One of the benefits in terms of the purpose of the research or evaluation itself is, according to Delbecq *et al* (1975) and a number of studies, is that using the Nominal Group Technique produces a greater number of ideas than with other group methods, e.g. focus groups or brainstorming (O'Neil and Jackson 1983; Lloyd-Jones *et al* 1999; Dobbie *et al* 2004; Kristofco *et al* 2005; Crenshaw *et al* 2011). In addition, Williams *et al* (2006) have found that using the technique allowed to carry out 'substantial work' in a short time. Others have found that in terms of the research purpose, the prioritisation stage helps decision-making by devolving it to the group (Lomax and McLeman 1984).

### **Benefits for the facilitator**

Studies on the benefits of using the Nominal Group Technique also cite advantages for the facilitator that leads the session. Most of these stem from the fact that the structure of the session restricts the role of the researcher (Lomax and McLeman 1984) and avoids the facilitator putting their own inference or interpretation on the group member's input (Williams *et al* 2006). If the discussion topic is controversial and is likely to end in heated discussions, the structure inherent in the session can act as a control mechanism that discourages the responses to be evaluated and discussed (Kristofco *et al* 2005). For the same reason, the technique can also be useful in a research setting when participants are seen as having more power than the facilitator (Williams *et al* 2006). According to Dobbie *et al* (2004), nominal groups require little facilitator input or preparation time, although this benefit is not necessarily shared by others.

### **Benefits for the 'commissioner' of the research**

And finally, there are a number of benefits that Nominal Group sessions can bring to the 'commissioners' of the research itself, who include the institution or the group of people to whom results are reported. In some of the above curriculum review examples, 'commissioners' therefore include the higher education institution and the academic teams involved in the undergraduate programmes.

The Nominal Group Technique can report the group consent between a large number of participants in a way that merges the views between groups, not only reporting on each small sub-group's views separately (as opposed to for example focus groups). This benefit is realised by the rank ordered responses between sub-groups and also having a quantitative output of results (Dobbie *et al* 2004) and by providing a concise summary of generated responses (Kristofco *et al*

2005). The Nominal Group Technique is also reported to maximise efficiencies in the research process and is an economic way of identifying teaching and learning issues (Lomax and McLeman 1984, Lloyd-Jones *et al* 1999).

### Issues and challenges when using the Nominal Group Technique

The examined studies suggest that there are a number of issues and challenges to consider when using the Nominal Group Technique. The importance of setting the question for the Nominal Group Technique has been discussed by Lomax and McLeman (1984) and Williams *et al* (2006) who stress that the question needs to be well-focused and not too wide. The training needs and the demands placed on the facilitator are also mentioned as characteristics of the Nominal Group Technique (O'Neil and Jackson 1983; Chapple and Murphy 1996; Williams *et al* 2006).

A number of studies report interesting challenges with regards to the consensus achieved in using Nominal Group Technique. For instance, Lomax and McLeman (1984) found that some participants felt strong ownership about the wording of responses, which was an issue when it came to members consolidating responses. They also found that views of individuals still influenced others in the discussion phase, similarly to Chapple and Murphy (1996). Other studies also encountered the group result to 'mask minority disagreement' (Williams *et al* 2006; Chapple and Murphy 1996). Another way researchers resolved the potential tension of group consensus, fearing that results are not representative of the whole cohort of students beyond the subgroup of students taking part in the Nominal Group Technique, was to run a follow-up survey with the whole year, based on the top 10 ranked items in the Nominal Group Technique (Lloyd-Jones *et al* 1999).

The work by Chapple and Murphy (1996) also discovered that the timing of nominal group sessions can bear an influence on the outcome of the research. In this study, a significant issue was not concluded to be a major problem at the time of the sessions, but which surfaced later with a greater vehemence. This was partly due to the timing of the session, and partly due to the nature of the ranking task, which asked participants to select their top five priorities, and although the issue was present in the list of issues identified by participants at this initial session, it did not make it into the top five most important ideas, and so was not further reported.

Other studies also detected the reporting of only the top five items to be an issue. One reason was that participants found it hard to select their top five items only (Chapple and Murphy 1996), and partly because when especially working with sub-groups and combining the top five responses of each group and re-ranking them across all the groups as a whole, significant items could be missed off the final top-five ranking (O'Neil and Jackson 1983).

Other concerns or challenges included that items produced by participants could be at different levels, which made them difficult to work with as a single list of very dissimilar items (O'Neil and Jackson 1983), or the visibility of *all* items in large groups in the discussion and voting phases (Lomax and McLeman 1984). In one instance, participant anxiety at the initial individual response producing stage was discerned but resolved (O'Neil and Jackson 1983).



Having discovered the benefits and challenges, the following section will now describe the project study, with regards to the methodology used.

## Methodology

The project started in November 2010 and ran up to October 2011. The work included carrying out a literature review on the Nominal Group Technique. The University Library's meta-engine, Discover, was used to identify articles focusing on studies on the Nominal Group Technique that included a curriculum review element, therefore is not necessarily representative of the whole body of research on the technique itself across the disciplines. For instance, the project team was less interested in organisational development studies and more so in studies which employed the technique for educational purposes in Higher Education. This focus was reflected in the search terms used – and which included 'curriculum review' and 'nominal group technique'.

The project team also drew on experiences of previous nominal group sessions carried out for the purpose of curriculum evaluation with undergraduate students in 2009/2010. These sessions consulted 7 and 10 students undertaking an undergraduate degree in Law. The purpose of the consultation was to find out students' learning experiences after a curriculum review initiative entitled 'TeachSmart' that involved elements of technology-enhanced learning. These sessions were conducted using pen-and-paper methods, including post-it notes. There were two questions used in the session: "What helps your learning?" and "What doesn't help your learning?" Students were also asked to relate these comments to particular modules (which were either TeachSmart or non-TeachSmart modules) so the analysis was able to cross-reference student comments and analyse them in relation to the new initiative. The ranked list of results were forwarded and presented to the academic programme team in Law.

The arrival of text-entry clickers, or personal response systems, was in February 2011. Clickers are electronic handsets that allow students to input textual or numeric input to a given question, and which responses are recorded electronically and can be immediately shown to the whole classroom audience, as well as recorded for further use. [WordWall](#) clickers were chosen as they were handsets developed for text-based entries (as opposed to other clickers which favour numeric entries). The project team was trained in their use in March by the software developers. During this initial training, the functions were reviewed and those selected that best suited each stage of the Nominal Group Technique. Some of these were not exact matches but approximation of the stages of the technique. A pilot Nominal Group Technique session with staff was run in April. At this stage, a pilot ranking tool was developed for the purposes of our project in time for the first student session.

The first student session using clickers was run using Nominal Group Technique in May 2011 with students of Music. The purpose of this session was to find out students experiences with a particular module, 'Study skills in Music', and the new teaching approach it involved, in particular a wiki task. The number of participants was 12. The 'question' was: 'What would you include in a

future Study Skills in Music module?' This session used the clickers in all of the stages. The results were fed back to the academic lead of the module.

Two further student focus group sessions, although using an adapted technique, were conducted with undergraduate students in BSc (Hons) Radiotherapy for the purpose of undergraduate curriculum review in October 2011. The project team is coordinating and contributing to, institutional curriculum review. The purpose of the focus group sessions was to explore student views of, and propose changes to, their current programme. The programme team provided the key content for the focus group, based on assessment, structure, content and delivery methods. Given that the Nominal Group Technique is more suitable to explore *one* single topic in a session and that the brief for the project team was to explore a number of issues (from assessment through to delivery methods), the Nominal Group Technique was found to be less useful in this given context. The project team, in collaboration with the programme team, therefore decided to use a focus group method that combined the use of open-ended questions along with elements of the Nominal Group Technique.

In this adapted method, the project team ran a two-part session. In the first part ('Open-ended structured questions'), a structured focus group discussion explored all areas under focus. In the second part ('Making decisions'), using elements of the Nominal Group, students were asked to individually respond to three suggestions on three questions. These were then themed by the facilitator, using face-to-face facilitated discussion, based on achieving group consensus, instead of individual ranking.

The three 'questions' were:

- Name three things there could be **less of** for your learning in the programme;
- Name three things there could be **more of** for your learning in the programme and;
- Name three things that could **stay the same** (about right) for your learning in the programme

The advantage of running these adapted focus group sessions was that the project team were able to compare and contrast this adapted method with both focus groups and the Nominal Group Technique.

## The team's adaptation of the Nominal Group Technique

Due to a number of factors, such as time and availability, the context and focus of the 'commissioned' research the project team used various adaptations of the original Nominal Group Technique as invented by Delbecq *et al* (1975). For instance, the project team typically did not have 2-2.5 hours to run a full nominal group session with volunteer students, only 1 – 1.5 hours.

Stages of the Nominal Group Technique	Nominal Group Technique for curriculum evaluation in Law	Nominal Group Technique for module evaluation in Music	Adapted focus group/Nominal Group Technique for curriculum Review in Radiotherapy
Welcoming statement	Introduction – questions and session structure.	Introduction – questions and session structure.	Introduction
Step 1 Silent generation	Stage 1 – individual responses	Stage 1 – individual responses	Part A – open-ended questions: focus group discussion on specific topics (e.g. assessment, delivery methods, programme structure)
Step 2 Round robin recording of ideas, Step 3 Serial discussion and clarification	Stage 2 – clarification and consolidation: responses are read out, clarified and discussed, similar items consolidated	Stage 2 – clarification and consolidation: responses are read out, clarified and discussed, similar items consolidated	
Step 4 Preliminary vote on item importance; Step 5 Discussion of preliminary vote (optional);	Stage 3 – individual ranking of responses (top five)	Stage 3 – individual ranking of responses (top five)	
Step 6 Final vote	Ranking results are calculated and shared with the group.	Ranking results are calculated and shared with the group.	Part B – making decisions: up to 3 individual suggestions for each of the 3 questions ('What would you like to have more of/less of/stay the same for your learning in your programme?')
Top five shared with the commissioners of the research	All the ranked list is shared with the commissioners of the research	All the ranked list is shared with the commissioners of the research	Part B – facilitator themes similar suggestions, clarification and group consensus via discussion
'Technology' of recording ideas: pen and flipchart, facilitator writes on board as participants dictate. Ranking by paper.	Ideas recorded on post-it notes which are pinned up by facilitator. Ranking by paper.	Ideas are typed in using a clicker and displayed on screen. Ranking by clickers.	All the list is shared with the commissioners of the research
			Ideas recorded on post-it notes which are pinned up by facilitator. Theme-ing by facilitator re-arranging post-it notes and reading out to participants. (No ranking.)

**Table 2 The sessions ran by the project, with detail on our adaptations of the Nominal Group Technique**

Table 2 summarises these adaptations in the different sessions. One of the main differences concerned the 'clarification' stage. Although Delbecq *et al* (1975) allows for discussion in this stage, many subsequent studies on Nominal Group Technique did not allow for discussion of the issues suggested by participants, but just to clarify ideas. The facilitator wanted to emphasise that in this stage, students were actively asked to discuss some of the items in order to gain enough detail through this stage on the items produced. Another difference was that whilst in other

Nominal Group Technique studies only the first, top five ranked items were shared with the commissioners of the research, in our case, the project team shared the *whole* ranked list where this was available. And finally, the main difference between the team's use of the Nominal Group Technique and the adapted version of focus group/Nominal Group Technique was that the session started with a group discussion using focused questions, which was then followed by individual item generation; group consensus was achieved by a facilitated discussion without the stage of ranking.

Findings reported below are drawn from the above student sessions, both in terms of the data collected in the student sessions as well as on the basis of the project team member's reflections, which were carried out post-session in October 2011. This is in line with the methodologies used by other studies.

## Findings

The purpose of this project was to share our experiences with running student feedback sessions using the Nominal Group Technique, and to see whether the use of clickers can make the process of conducting these student sessions more efficient and engaging. Both of the findings for these aims are discussed in this section.

### Findings with regards to the Nominal Group Technique

The project team found that for the different purposes of module & curriculum evaluation and review the use of the Nominal Group Technique was extremely useful. The results were fed back to the academic teams and were found to be useful indicators of student feedback.

Many of the benefits discussed in the Literature Review section (page 6 onwards) were realised, in terms of the individual members, giving equal voice to participants or helping to promote participation, giving a sense of satisfaction to students when they see their suggestions in writing. It was a clear benefit that students were generating their own issues rather than those prescribed by academic staff members in module evaluation forms. The team was also able to compare the number of items generated during the combined method in the radiotherapy sessions: in part A, the open-ended focus group session 44 items were discussed under 7 themes. In part B, the 'nominal' part, as a result of individual item generation (the 'nominal' part), 112 items were generated in the 3 questions in 24 themes, which suggests that the individual item generation does have the potential to yield a large number of responses. Although the project team did audio-record the sessions to save the clarification and discussion stage, and used these recordings to fine-tune writing up of results, the results were immediately available after each session, making it an efficient method for consulting students for feedback. The team also found students to be very engaged in the whole feedback process.

Despite the various benefits of the Nominal Group Technique, the project team also came across a number of issues that ranged from practical advice for future sessions through to the more fundamental aspects of the technique itself. These included:

## Practical considerations:

- If the structure is not properly introduced, students can get confused especially in the clarification stage when the merging of items occurs.
- Students can start combining responses on the same post-it notes, so they need reminding to write one suggestion or item per post-it note, so that they can be manipulated later as a separate item.

## Considerations in the various stages of the nominal group session:

- **Differences in facilitation** – although differences in facilitation concerned mainly the practical aspects of running the group session, it was nevertheless an issue worth noting. This regarded subtle differences, for instance when the project team ran the Law Curriculum Review sessions in two subgroups, the two facilitators ended up using numbering the items and then the subsequent ranking in slightly different ways which only became evident when merging the two ranked lists between groups. It is important to highlight that this was a minor procedural issue which did not influence the outcome of the process.
- **Item generation** – the ‘question’ needs to be really clear and well introduced, so that people do not get stuck at the start. Facilitators felt that students were not always ‘warmed up’ well enough to start talking about their programme in detail, straight after announcing the research question, e.g. ‘What helps your learning?’ or ‘What changes would you make to this module?’
- **Clarification and consolidation** - students were found in this stage ‘theme’-ing items (e.g. grouping all items that concern feedback on their coursework together) rather than appreciating the different aspects that each individual formulated. The facilitator needs to be alert so that theme-ing of responses does not happen. (So for instance, if student A has put what helps my learning is ‘when I get individual feedback’ and student B has put ‘when I get timely feedback’; students in the consolidation stage may say A & B are the same, they are both about feedback. Whereas, A and B responses are different and should stay as different items.
- **Ranking** – the facilitators always forwarded the whole of the ranked list of items, not just top five, as all those that students recommended were deemed relevant to the programme team, with the top five being indicators of the most important ones. This was to overcome the danger of presenting only the top five priorities (Chapple and Murphy 1996; O’Neil and Jackson 1983).

## Using the Nominal Group Technique in different contexts

What the project allowed the project team to better understand was the suitability of the Nominal Group Technique in different research contexts. This has been summarised in the accompanying *The Nominal Group Technique: a practical guide for facilitators*, and also copied below.

Context	NGT is more useful for:	NGT is less useful for:
Research purpose	Evaluation and decision-making	Researching general learner experiences
Topic focus	When you have one single topic to explore	When you have more topics or a complex topic to explore
Likely research questions	“What changes would you make to your programme/curriculum?” “What would help you improve the quality of feedback on this course?”	“What are your experiences with your programme so far?” “What are your experiences with the quality of feedback on this course?”
Participants	Participants with different power relations within the same group; when consulting various stakeholders groups within same research (e.g. from students through to experts).	If power relations are not a major issue in the group.

**Table 3** The usefulness of the Nominal Group Technique under different research and evaluation contexts (source: Varga-Atkins (2011) *The Nominal Group Technique: a practical guide for facilitators*)

Based on the project team’s work-to-date, the Nominal Group Technique appears more useful for exploring single topics, and for evaluation, decision-making and action planning, whereas it appears it is less useful in contexts that involve exploring the general experiences of learners or multiple/complex topics. It would then appear an especially useful tool when consulting staff on their view on curriculum review or design, and who – as individuals - are likely to have set views about teaching/learning. The Nominal Group Technique can serve as a useful method in reducing the opportunities for vocal members to engage in debate, and instead, allow each participant to express views, with the majority making the final decision. With students, the power between participants was found to be less of an issue: students could be focusing on one issue that was close to their heart, but this usually did not impact or deter other students from voicing (or having) different experiences. Nevertheless, the Nominal Group Technique was useful in allowing even shy and reticent group members to contribute, and therefore the project team consider it a useful tool to engage students or staff members in curriculum feedback. An important innovation was the running of an adapted session which combined elements of the Nominal Group Technique in a focus group session. The advantage of this approach was that it made it possible to run a session with the purpose of multiple topics (not possible via only a Nominal Group session), as well as ‘warming’ up the students in a group discussion, whilst also keeping the element of individual work which preceded effective group decision. The next section will detail the project findings as to the use of clickers in Nominal Group Technique.

## Clickers: the use of technology in Nominal Group Technique

One of the aims of this study was to find out whether the use of personal response systems, i.e. 'clickers', can make the conduct of the Nominal Group Technique more engaging and efficient.

The consulted studies in our literature review – with the exception of one – all used pen-and-paper methods for conducting Nominal Group sessions. Only Kristofco *et al* (2005) conducted the session using technology. Their participants were located at different sites so they used a synchronous web-conferencing platform to conduct the whole session online. No studies consulted experimented using technology in conducting face-to-face sessions.

As mentioned in the Methodology section (page 9), one of the reasons for the project team to experiment using clickers in a face-to-face session was to see whether the process of the various stages can be made more efficient. For instance, in previous sessions, the facilitator had to write responses manually on a board whilst the participants waited for this to complete (and which handwritten responses then needed to be converted electronically for report writing at a later stage); or the post-it notes were not always legible. Reducing the time spent on handwriting responses and improving whole-group visibility and legibility of suggestions were all expected benefits of implementing a technological solution.

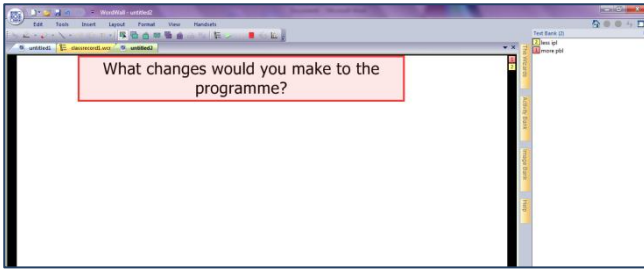
What follows in this section is therefore the evaluation as to the efficiency of the particular clickers and software used, namely the WordWall clickers, with indication as to what an 'ideal' software solution would look like that would improve the efficiency of facilitating a Nominal Group session.

Firstly, Figure 1- Figure 5 illustrates the stages of the Nominal Group process. The session with clickers started with the introduction of the purpose of the session, its structure and handsets were handed out to each participant, with a laptop connected to a projector. Students then entered their individual responses.



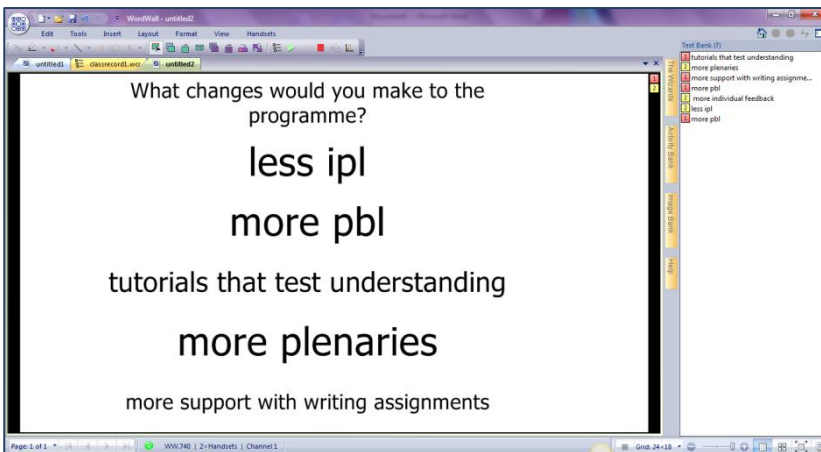
**Figure 1 Stage 1 of the Nominal Group Technique: entering individual responses using a clicker**

Responses then were collected in a 'TextBank' (the examples used in the illustrations are not from a real session).



**Figure 2 Stage 1 of the Nominal Group Technique: individual responses (see TextBank where responses are recorded in right panel of the screen)**

The facilitator then dragged all responses from TextBank onto the central screen for all participants to see.



**Figure 3 Stage 2 of the Nominal Group Technique: consolidating responses dragged from TextBank on to screen after everyone has submitted their responses**

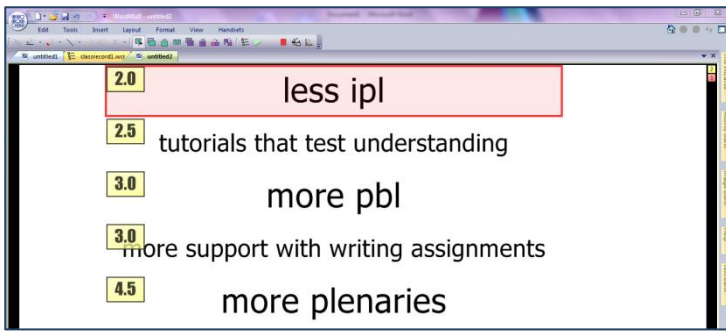
After a clarification and consolidation stage, duplicate items were deleted or edited together. Finally, students were asked to select the five most important items and rank them in order of importance.



**Figure 4 Stage 3 of the Nominal Group Technique: ranking responses with the clickers**

The ranked results were automatically calculated and displayed to students.





**Figure 5 Stage 3 of the Nominal Group Technique: the top five ranked responses (in this tool, the item gaining the least points is the one designated with the highest importance)**

When the session was run in May, a full ranking tool was not yet operational; a pilot ranking tool was, however, available, but this pilot tool was not yet very intuitive. As the software development team was very responsive to the team’s requests and feedback, the ranking tool had undergone further development so at the time of writing these teething problems had been resolved.

<b>Stages of the Nominal Group Technique</b>	<b>A. Nominal Group Technique without technology</b>	<b>B. Nominal Group Technique with technology (WordWall clickers)</b>
Introduction – questions and session structure.	None. (Facilitator speaks.)	None. (Facilitator speaks.)
Stage 1 – individual responses	1 Participants write each response on a post-it note.	1.1 Participants enter responses via clickers (anonymously). 1.2 Items are dragged onto screen from ItemBank.
Stage 2 – clarification and consolidation: responses are read out, clarified and discussed, similar items consolidated	2.1 Participants stick post-it note on a flipchart 2.2 Participant or facilitator reads out each response one by one. 2.3 Facilitator numbers each item. 2.4 Consolidation by grouping similar post-it responses together. 2.5 Re-numbering items (if merged).	2.1 Each response is displayed on screen for whole group to see.  2.2 Similar items are merged.
Stage 3 – individual ranking of responses (top five)	3 Using a paper voting sheet, the numbered items are ranked (top five).	3 Participants vote their top five using their clicker
Ranking results are calculated and shared with the group.	4.1 Participants read out ranked items, facilitator codes results on a calculation sheet. 4.2 Facilitator manually calculates top five results (or using a calculator).	4 Results are automatically calculated by the software.
All the ranked list is shared with the commissioners of the research	5 Post-it notes & ranked items need typing up electronically so that they can be shared.	5 Ranked list is available electronically and can be shared immediately.

**Table 4 The use of technology in each stage**

Table 4 shows above a side-by-side comparison of the stages of the Nominal Group Technique in two scenarios: A) when the session was run using traditional ‘technologies’, i.e. with pen, paper, post-it notes and flip charts and B) when the session was run using the WordWall clickers.

Table 4 shows the potential savings that had been envisaged by using technology to enhance the efficiency of conducting the session. These were in the areas of:

- Stage 1 – answers using clickers are immediately saved.
- Stage 2 – responses are immediately visible to the whole participant group; grouping and editing items is ‘easy’ and that the facilitator does not need to worry about numbering items for the ranking stage.
- Stage 3 – the ranking tool numbers the items, the ranking results are calculated automatically and so the final results (the list itself together with its priority ranking) are immediately available for forwarding to the commissioner of the research.

In Table 5, the different Stages are summarised, together with how well they worked using the clickers and how they then related to the envisaged benefits.

<b>The Nominal Group Technique using WordWall clickers</b>	<b>How did this work?</b>
<p><b>Stage 1 – individual responses</b></p> <p>1.1 Participants enter responses via clickers.</p> <p>1.2 Items are dragged on to screen from ItemBank.</p>	<p>1.1 This worked well – responses were saved electronically and could be retrieved later.</p> <p>1.2 The disadvantage in this stage was that responses were not free floating on screen but had to be associated with grid cells and that responses needed to be dragged out on to screen to display, it was not an automated process. It was still much quicker than writing each response on the flipchart by hand.</p>
<p><b>Stage 2 – clarification and consolidation</b></p> <p>2.1 Each response is displayed on screen for whole group to see.</p> <p>2.2 Similar items are merged.</p>	<p>2.1 Whole-group display worked well.</p> <p>2.2 <i>This was the most difficult stage to achieve electronically</i></p> <p>Although the end-product was ok, i.e. all responses were consolidated, in comparison with the flipchart/post-it method, it was clunky.</p> <p>Responses were displayed and whereas post-it notes could be easily grouped, this wasn't the case with items in cells of a table (they were less 'groupable'). Another issue was that the WordWall software did not allow in-line editing of a grid text, you had to use backspace to delete text before re-editing the new text (e.g. if you wanted to change 'Mi item' to 'My item', you had to delete the whole text up to 'M' and then re-enter 'My item').<sup>1</sup> Merging of items was visually difficult, because of the lack of flexibility to move items around on screen and the issue of editing.</p> <p>Overall, there were gains in immediately having electronic texts which was counterbalanced by the loss of flexibility of post-it notes.</p>

<sup>1</sup> This feature is coming in the next version of the product.

The Nominal Group Technique using WordWall clickers	How did this work?
<b>Stage 3 – individual ranking</b> 3 Participants vote their top five using their clicker and the ranking tool	The ranking tool in WordWall is much better improved now since when it was first piloted in May 2011. One consideration in this stage should be that at the point of ranking, students should be able to see <i>all</i> items together as a list so that they can choose their top five easily.
4 Results are automatically calculated by the software.	The ranking tool calculates the prioritised list automatically. Calculation with WordWall clickers uses a slightly different method than described by Delbecq <i>et al</i> (1975) in which the top-ranked items get the most points. The calculation of the WordWall software computes in a way that the top chosen item has the least score.
5 Ranked list is available electronically and can be shared immediately.	This wasn't tested at the May 2011 session, but it should be no problem to have ranked results electronically.

**Table 5 Findings: the use of technology in each stage**

To summarise the findings: using clickers (in this particular case with these particular clickers/software) worked best in Stages 1 and 3 for entering responses and calculating ranking (with some of the provisos in ranking as outlined in Table 5). Clickers worked least well in stage 2. The 'functions' the team were trying to enhance using technology were grouping and editing similar items together for clarification, and merging similar items together if they were considered the same. The clicker software was a bit too rigid for these functions and even if it was possible to conduct the session in line with the Nominal Group Technique, it was slightly more time-consuming than expected for a technological solution and required more attention on the part of the facilitator. The software developers of WordWall were however very responsive to the suggestions made by the project team, especially in creating the ranking tool on request, and it is possible that future versions of the software may be more suited to the conducting a Nominal Group Technique with clickers.

To conclude, using the WordWall clicker software, and in general clickers, has the potential to enhance the efficiency of the stages, though currently these advantages surface mainly for stages 1 and 3 of the process, and less so for Stage 2, clarification and consolidation. On the basis of project experiences, the next section examines the desired features of an ideal clicker which would make the conduct of the Nominal Group Technique more efficient. In this search for an ideal tool, alternative software tools are also considered.

### **'Ideal' technology requirements and alternative tools**

Presuming that a potential tool would seamlessly aid the facilitator in the conduct of all the stages of the Nominal Group Technique, a list of requirements is drawn up (Figure 6).

**Stage 1**

1 Participants use handsets, or mobile phones, to type their responses. These are automatically saved as a list.

**Stage 2**

2.1 The responses are displayed on screen for everyone to see.

2.2 Items can be dragged-and-dropped across the screen to visually group similar items together. (Similarly to how we can group post-it notes.)

2.3 Items can be easily edited (text changes), or deleted, if relevant.

**Stage 3**

3 Participants vote their top five using their clicker and the ranking tool. (The tool numbers the items automatically, ready for voting.)

4 Results are automatically calculated by the software, preferably using the ranking method by Delbecq et al (1975).

5 Ranked list is immediately available electronically and can be shared with others.

**Figure 6 Technology requirements of a tool that can enhance the conduct of a Nominal Group Technique session**

Another issue in using such a technological solution would need to consider is the maximum capacity that a display screen can cater for in terms of the number of items generated. If for instance, in a group of 12, every participant generates 3 responses, a total of 36 responses needs to be displayed, which should be okay and visible in a room of 12 people (dependent on the projector's placement as well). But as the number of participants or items generated may grow, any solution that uses a computer screen would need to accommodate all responses.

Clearly, the clickers and software, such as WordWall, are being developed further, and would serve as one technological solution. The project team has also started exploring other tools that may be useful to those considering the Nominal Group Technique. One such freely available tool is Google Moderator (<http://moderator.appspot.com/>), which allows the setup of a topic to which participants are invited to add suggestions. These suggestions are displayed to all on the web and participants can tick the suggestion they like, therefore creating the ranking/voting element (Figure 7). The combination of item generation with the voting element gives the option to approximate the technique.



**Figure 7 A Google Moderator topic: topics can contains suggestions and each suggestion can be voted on by invited participants**

This online tool has the advantage that it is free, suggestions can be further discussed online, and ranking is simple. It suits an online consultation better than it being used within a face-to-face focus group session. Therefore, it would seem to sit better as an approximation of The Delphi tool (Delbecq *et al* 1975), which was developed for consultation at a distance, rather than the Nominal Group Technique. Another difference with regards to the Nominal Group Technique is that the responses are immediately displayed to participants, it does not require them to commit their responses before seeing others', and that the individual response and voting stages are not as clearly separated as they are in the Nominal Group Technique. (Although facilitators could set two deadlines, one for response generation and one for voting to keep up this separation.)

Another, recently discovered relevant piece of software is WallWisher ([www.wallwisher.com](http://www.wallwisher.com)), which is an online notice-board maker tool.



**Figure 8 WallWisher.com – a tool for online post-it notes on a given topic**

WallWisher allows participants to log on to a 'Wall' and create post-it notes which they can drag and drop, this feature may be particularly useful for certain stages of the Nominal Group Technique. If this tool allowed participants to add post-it notes via mobile phones or upload them using a list of responses already generated by WordWall, then this technique would be especially

useful for Stage 2 of the Nominal Group Technique. (The authors are currently investigating the potential of this tool.)

To conclude, in this section the use of clickers in the conduct of Nominal Group Technique was evaluated, the project team examined the technological requirements of an 'ideal' tool that could enhance the efficiency of conducting such a session and also other tools that could be useful alternatives. In the final section, the project team conclude our project findings.

## Conclusion

The aims of the research project were to:

1. Share the project team's learning with fellow researchers on the experiences of running student feedback groups using the Nominal Group Technique.
2. Trial text-entry clickers in order to see whether their use can make the process of conducting the student feedback sessions more efficient and engaging.

This project report detailed the project team's learning about the use of Nominal Group Technique. It included the examination of other, relevant learner evaluation studies, which used the technique, together with its benefits and challenges. A way of sharing these experiences with both staff and students was in the form of a practical guide on the Nominal Group Technique (Varga-Atkins 2011), one of the project's outputs. Using the Nominal Group Technique appeared to bring the same benefits as outlined in the consulted literature (page 6 onwards). The Technique offers a democratic way of consultation, which gives equal voice to all participants, encourages participation and engagement. Its inherent structure allows members to come up with their own suggestions, yielding in a prioritised list of action items based on group consensus. It is also an efficient method in that it provides a high number of suggestions in a short space of time.

The project also described the ways in which the Nominal Group Technique was adapted to suit a range of purposes. The Nominal Group Technique seems best suited to single topic evaluations or when items for action need to be identified (e.g. typically answering the question 'How could this programme be improved?'), and less suited to researching general experiences, or when a complex topic needs exploring (e.g. a typical research question could be 'What are your experiences with XY teaching approach?')

One of the main rationales for the project was to explore whether the use of text-entry clickers can make the process more efficient and engaging during facilitation. No other studies experimented with using technology in the conduct of a face-to-face session. A particular clicker, WordWall, was tested and it was concluded that the use of clickers does have the potential to enhance the different stages (1) individual response generation, 2) clarification and consolidation of responses, 3) ranking. In its current version, the software can enhance stages 1 and 3, whilst it is

less flexible when it comes to consolidating items on screen (stage 2). The report compiled a list of requirements that such a technological solution would need to cater for, as well as indicated some alternative tools as approximations, though not complete matches, as to the Nominal Group Technique. These tools included an online voting site, *Google Moderator* and the online post-it board tool, *WallWisher*. The project team feels that the work undertaken has usefully contributed to the assessment that the use of clickers does have the potential to make the conduct of sessions more efficient. Although the clickers used in the study in their current form are less suited for conducting groups. However, the project team was able to identify the technological requirements of any potential system to be considered, and so is in a much better position to evaluate whether the use of any other tool would make the process more efficient. One limitation of the report is that of examining student engagement in a systematic way in relation to the technique. The data relied on comprised of facilitators' observation and reflections of students. One recommendation for future study includes the gathering of systematic primary data from students with regards to their engagement in the process.

Finally, for the project team, the work has provided a valuable learning opportunity, an extension to the two original project objectives. The learning gained includes a deeper conception about the technique itself, especially the suitability of Nominal Group Technique in different educational contexts. As a result, and a further outcome of the project, the team has developed a technique that combines focus group methodology with elements of the Nominal Group Technique. One of the advantages of this combined technique was that it seems more suited to a context in which multiple topics needed to be explored, and in which context the Nominal Group Technique was found less useful. The other advantage was that the initial group discussion 'warmed up students' to the topic(s) in question so by the time their 'nominal group' work occurred in the second part of the session, they had a chance to think through these issues. This combined method was found to be a really useful alternative method to use in student feedback sessions. Further exploration of this combined method is recommended for future study, as is the continuation for a search for appropriate technologies that can aid the facilitator's conduct of face-to-face Nominal Groups.

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